

Derwent WPI

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**Digital data transmission system with sliding window data flow control - has data buffered within window and performs missing frame retransmission on reception of data frames which are out of order**

Patent Assignee: NOKIA CORP (OYNO); NOKIA TELECOM OY (OYNO); NOKIA TELECOMMUNICATIONS OY (OYNO)

Inventor: AHOPELTO J; KANERVA M; KARI H; VAINIKKA J

Patent Family ( 18 patents, 69 & countries )							
Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
WO 1996036154	A1	19961114	WO 1996FI260	A	19960508	199651	B
FI 199502256	A	19961110	FI 19952256	A	19950509	199707	E
FI 98174	B	19970115	FI 19952256	A	19950509	199708	E
AU 199656506	A	19961129	AU 199656506	A	19960508	199712	E
EP 788702	A1	19970813	EP 1996913557	A	19960508	199737	E
			WO 1996FI260	A	19960508		
JP 10503075	W	19980317	JP 1996533810	A	19960508	199821	E
			WO 1996FI260	A	19960508		
KR 1997704284	A	19970809	WO 1996FI260	A	19960508	199836	E
			KR 1996707574	A	19961230		
US 5930233	A	19990727	WO 1996FI260	A	19960508	199936	E
			US 1997765067	A	19970106		
AU 708324	B	19990805	AU 199656506	A	19960508	199943	E
CN 1153583	A	19970702	CN 1996190461	A	19960508	200306	E
			WO 1996FI260	A	19960508		
KR 389700	B	20031004	WO 1996FI260	A	19960508	200415	E
			KR 1996707574	A	19961230		
CN 1099182	C	20030115	CN 1996190461	A	19960508	200532	E
EP 788702	B1	20050720	EP 1996913557	A	19960508	200547	E
			WO 1996FI260	A	19960508		
DE 69634948	E	20050825	DE 69634948	A	19960508	200557	E
			EP 1996913557	A	19960508		
			WO 1996FI260	A	19960508		
JP 3727066	B2	20051214	JP 1996533810	A	19960508	200582	E

			WO 1996FI260	A	19960508		
ES 2245784	T3	20060116	EP 1996913557	A	19960508	200609	E
DE 69634948	T2	20060524	DE 69634948	A	19960508	200635	E
			EP 1996913557	A	19960508		
			WO 1996FI260	A	19960508		
CA 2193379	C	20070925	CA 2193379	A	19960508	200765	E
			WO 1996FI260	A	19960508		

Priority Applications (no., kind, date): FI 19952256 A 19950509

Patent Details							
Patent Number	Kind	Lan	Pgs	Draw	Filing Notes		
WO 1996036154	A1	EN	23	3			
National Designated States,Original	AL AM AT AU AZ BB BG BR BY CA CH CN CZ DE DK EE ES FI GB GE HU IS JP KE KG KP KR KZ LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK TJ TM TR TT UA UG US UZ VN						
Regional Designated States,Original	AT BE CH DE DK EA ES FI FR GB GR IE IT KE LS LU MC MW NL OA PT SD SE SZ UG						
FI 98174	B	FI			Previously issued patent	FI 9502256	
AU 199656506	A	EN			Based on OPI patent	WO 1996036154	
EP 788702	A1	EN			PCT Application	WO 1996FI260	
					Based on OPI patent	WO 1996036154	
Regional Designated States,Original	AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE						
JP 10503075	W	JA	22		PCT Application	WO 1996FI260	
					Based on OPI patent	WO 1996036154	
KR 1997704284	A	KO			PCT Application	WO 1996FI260	
					Based on OPI patent	WO 1996036154	
US 5930233	A	EN			PCT Application	WO 1996FI260	
					Based on OPI patent	WO 1996036154	
AU 708324	B	EN			Previously issued patent	AU 9656506	
					Based on OPI patent	WO 1996036154	
CN 1153583	A	ZH			PCT Application	WO 1996FI260	
					Based on OPI patent	WO 1996036154	

KR 389700	B	KO		PCT Application	WO 1996FI260
				Previously issued patent	KR 97004284
				Based on OPI patent	WO 1996036154
EP 788702	B1	EN		PCT Application	WO 1996FI260
				Based on OPI patent	WO 1996036154
Regional Designated States, Original	AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE				
DE 69634948	E	DE		Application	EP 1996913557
				PCT Application	WO 1996FI260
				Based on OPI patent	EP 788702
				Based on OPI patent	WO 1996036154
JP 3727066	B2	JA	11	PCT Application	WO 1996FI260
				Previously issued patent	JP 10503075
				Based on OPI patent	WO 1996036154
ES 2245784	T3	ES		Application	EP 1996913557
				Based on OPI patent	EP 788702
DE 69634948	T2	DE		Application	EP 1996913557
				PCT Application	WO 1996FI260
				Based on OPI patent	EP 788702
				Based on OPI patent	WO 1996036154
CA 2193379	C	EN		PCT Application	WO 1996FI260
				Based on OPI patent	WO 1996036154

### Alerting Abstract WO A1

The radio transmission system includes a non-transparent circuit-switched data connection between a transmitting party and a receiving party. A data flow control protocol involves transmission of data frames in a preset order on the data connection. The order of the received data frames is checked, based on order information included in the frames. Properly received data frames are acknowledged, and erroneous or missing data frames are retransmitted.

The transmitting party can temporarily group data frames. The receiving party, on detecting a missing data frame based on the order information, sends a retransmission request for the missing data frame with a delay to ensure that the missing frame has not been sent later.

USE/ADVANTAGE - E.g. mobile communication system using GSM standard. Avoids unnecessary retransmission of data frames by giving time for delayed frames to arrive.

**Title Terms** /Index Terms/Additional Words: DIGITAL; DATA; TRANSMISSION;

SYSTEM; SLIDE; WINDOW; FLOW; CONTROL; BUFFER; PERFORMANCE;  
MISS; FRAME; RETRANSMISSION; RECEPTION; ORDER

### Class Codes

International Patent Classification					
IPC	Class Level	Scope	Position	Status	Version Date
H04L-029/06; H04L-029/08			Main		"Version 7"
H04L-0001/08	A	I	L	B	20060101
H04L-0012/50	A	I	L	B	20060101
H04L-0012/56	A	I	L	B	20060101
H04L-0012/56	A	I	L	R	20060101
H04L-0012/56	A	I		R	20060101
H04L-0029/06	A	I	F	B	20060101
H04L-0029/08	A	I	F	R	20060101
H04L-0001/08	C	I	L	B	20060101
H04L-0012/50	C	I	L	B	20060101
H04L-0012/56	C	I	L	R	20060101
H04L-0012/56	C	I		R	20060101
H04L-0029/06	C	I	F	B	20060101
H04L-0029/08	C	I	F	R	20060101

**US Classification, Issued:** 370231, 370410

File Segment: EPI;

DWPI Class: W01

Manual Codes (EPI/S-X): W01-A06E1; W01-A06F; W01-A06G1; W01-A07C

### Japan

**Publication No. JP 10503075 W (Update 199821 E)**

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**Language:** JA (22 pages)  
**Application:** JP 1996533810 A 19960508 (Local application)  
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**Priority:** FI 19952256 A 19950509  
**Related Publication:** WO 1996036154 A (Based on OPI patent )  
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**Publication Date:** 20051214  
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**Priority:** FI 19952256 A 19950509  
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WO 1996036154 A (Based on OPI patent )  
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**Current IPC:** H04L-12/56(R,A,I,M,EP,20060101,20051008,A) H04L-  
12/56(R,I,M,EP,20060101,20051008,C) H04L-  
29/08(R,I,M,JP,20060101,20060310,A,F) H04L-  
29/08(R,I,M,JP,20060101,20060310,C,F)